Proposals for Non-High Priority Site Designations for the Red Tree Vole in the Row River Watershed

Cottage Grove Ranger District
Umpqua National Forest

Contents

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Umpqua National Forest, Cottage Grove Ranger District

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The Cottage Grove Ranger District is situated in the Row River 5th field watershed in western Oregon, southeast of the town of Cottage Grove in the central Cascades (Figure 1). The Cottage Grove Ranger District (the District) is currently planning two projects centered in the Sharps Creek sixth field sub-watershed (a sub-watershed of the Row River) which contains relatively large, continuous expanses of late successional and old-growth forests. In the Northwest Forest Plan 15 Year Monitoring Report, Davis et al. (2011) found that wildfire was the cause of most of the late successional and old growth habitat (LSOG) lost since the establishment of the Northwest Forest Plan (NWFP); of the approximately 217,100 acres of LSOG habitat lost between 1991 and 2008, wildfire was associated with 183,800 acres (85%) of the losses (Davis et al. 2011). This fact is part of the underlying rationale driving the planning for the Quartz Integrated Project (Quartz Project) and Calapooya Divide Integrated Project (Calapooya Project). These projects are partially designed to address concerns of loss of high quality late-successional/old-growth habitat (LSOG) due to large, high intensity wildfire by placing commercial thinning units and non-commercial shaded fuel breaks (Fuel breaks are understory-only roadside treatments) in strategic ridgetop areas throughout the sub-watershed in order to break up continuous canopy fuels (Figure 2); this would offer more options for fire management should a wildfire occur in the area. Refer to the Quartz Project Draft Environmental Assessment and the Calapooya Project Scoping Letter for more information about the rationale, design, and proposed actions for these two projects located at http://www.fs.usda.gov/projects/umpqua/landmanagement/projects.

The Row River watershed is within the Northern Mesic Zone according to the Survey Protocol for the Red Tree Vole, Version 3.0 (USDA/USDI 2012b), which calls for pre-disturbance surveys in conifer stands with a quadratic mean diameter (QMD) ≥16" meeting general habitat conditions below 3,500 feet in elevation. Because of this, protocol surveys were conducted in all unmanaged stands below 3,500 feet because preliminary stand exam data suggested QMDs at or above 16" in general RTV habitat for both projects. Through a combination of these agency pre-disturbance surveys, historic survey data, and surveys conducted independently by a citizen group, evidence of past and present red tree vole occupancy has been recorded throughout the watershed within and outside of proposed commercial thinning units. These RTV occupancy data have been grouped into what are known as "known sites" under Survey and Manage guidelines in the 2001 Record of Decision (2001 ROD), with "active" or "assumed active" known sites requiring management according to management recommendations under the ROD (USDA/USDI 2001). Some of the actions proposed in the Quartz and Calapooya Projects, including commercial thinning and some components of meadow restoration activities, may impact red tree vole (RTV) habitat and may not be allowable under management recommendations where RTVs are present (USDA/USDI 2000).

The 2001 ROD provides for a process for land managers to designate non-high priority sites (NHP sites; sites not required for species persistence and, therefore, not requiring management according to official management recommendations) on a case-by-case basis. In general, four criteria

are assessed to determine whether sites are not needed to provide for a reasonable assurance of species persistence as a part of this process. Based on habitat conditions and species presence at the stand and watershed level (see the following analysis), we determined that the sites delineated in this document are not needed for RTV species persistence and that they may be designated as such according to the 2012 direction contained in FS/BLM memorandum 1900/2600 (FS)/1736 (BLM) (OR931).

Analysis

Life History:

The red tree vole (*Arborimus longicaudus)* is a small arboreal rodent which is endemic to the conifer forests of western Oregon and California between the Klamath and Columbia Rivers. Vole populations appear to be widely distributed across Western Oregon, and are most abundant in the south and central Coast Ranges, and the central Cascades (Forsman et al. 2004). This distribution and abundance is reflected in Umpqua National Forest RTV records, with 443 known sites (comprised of 1,384 RTV nests) spread across the Forest (Figure 3). RTVs live in conifer trees and feed on conifer needles; primarily needles from Douglas-fir, though RTVs have been known to feed on grand fir, western hemlock, and Sitka spruce on occasion (Benson and Borell 1931, Maser 1965). RTVs are often present in younger stands with dense canopies which are thought to offer suitability for dispersal or other potentially important life history functions, but they have long been considered to be closely tied to late-successional/old growth characteristics which has been supported through time by studies on life history and habitat selection modelling (Benson and Borell 1931, Maser 1965, Aubry et al. 1991, Carey 1991, Huff et al. 1992, Thompson and Diller 2002, Swingle 2005, Swingle and Forsman 2009, Dunk and Hawley 2009). Though home ranges are generally small, and dispersal is considered to be limited for RTVs, individuals typically utilize nests in multiple trees. RTVs generally move from tree to tree via intersecting limbs, but are also known to move across the ground for relatively short distances, including across small roads and forest openings, in order to move to a different tree (Swingle 2005, Swingle and Forsman 2009).

Description of Stands Where Proposed NHP Sites are Located:

The thinning stands proposed for the Quartz and Calapooya Projects not meeting the Pechman exemption (thinning projects in stands younger than 80 years) range from 90 to 160-years-old and are concentrated in the mid to upper slopes near ridgelines. These are primarily even-aged stands that naturally regenerated following full-stand and partial-stand replacement fires that dominated the watershed at the turn of the last century. Today, these stands resemble regenerated plantations in that they are densely-stocked with a single canopy layer and dominated by a single overstory tree species and with little understory diversity or natural canopy gaps.

The thinning stands are dominated by Douglas-fir trees with minor amounts of other conifers including western hemlock, western red cedar, incense cedar, and with a scattering of sugar pine and western white pine. Collectively, these minor tree species make up a very small amount of the dominant canopy (estimated at 2-5% of the canopy). Scattered hardwood trees, like Pacific madrone and golden chinquapin, are found on drier slopes while red alder and bigleaf maple are found near the riparian areas. On average, hardwood trees in total comprise less than 4% of the stands' trees per acre and are

often restricted to the understory. The understory shrubs are dominated by Pacific rhododendron, vine maple, salal and dwarf Oregon grape.

Project-Specific RTV Considerations: Quality of RTV habitat varies across the landscape. Collectively, the natural stands proposed for thinning are considered suitable under the general conditions described in the survey protocol for RTV (conifer stands with QMD≥16 inches, canopy closure ≥60%, minor superdominant tree elements; USDA/USDI 2012). However, not all habitat which would be considered suitable is of equal quality. The natural stands proposed for thinning were selected partly because they exhibited the least amount of structural complexity/late successional habitat quality out of the harvestable stands on that portion of the landscape. During field visits and survey work district resource specialists assessed habitat quality and adjusted acreage to exclude high-quality late successional habitat. The resulting thinning units are comprised of single-storied, low complexity stands. These stands are all adjacent to areas of multi-storied forest with moderate to high structural diversity which provide higher quality habitat for RTV. The proposed thinning units, while generally suitable, comprise relatively low quality habitat In relation to the rest of the local landscape. Regardless of relative quality, these thinning stands are known to be occupied by RTVs, and as a result RTV's and their habitat will be impacted by planned thinning at the stand scale. However, the fact that voles are present in stands with relatively low habitat quality likely indicates that adjacent stands of higher habitat quality support RTV in at least the same densities, if not higher densities, based on stand characteristics and sink-source relationships for the RTV (Carey 1991).

Known RTV sites:

The Row River 5th field watershed contains 96 sites comprised of 228 nests. The project areas contain 28 RTV sites within the Row River watershed comprised of 75 individual nests which were discovered during agency pre-disturbance surveys or contributed by citizen tree climbers (Figure 4; one RTV site was located by citizen surveyors across the watershed boundary in the Canton Creek watershed which is automatically considered NHP based on 2003 direction described below, and is not included further in the Row River analysis). Of the 28 sites, 19 are considered active, six are considered inactive, and three sites are unconfirmed to species but are considered as active RTV known sites for management purposes. The six inactive RTV known sites do not require site management under the Red Tree Vole Management Recommendations, leaving 22 known sites within the project area that do.

In 2003 the USFS and BLM released programmatic direction for NHP designation based on certain site-specific criteria (see USFS/BLM memorandum 2630(FS)/1736PFP(BLM)(OR-935)P). Some watersheds were excluded from site management in Matrix/AMA and overlapping Matrix/Riparian Reserve and AMA/Riparian Reserve land-use allocations based on amount of habitat in reserve land (any sites found in those land-use allocations in the adjacent Canton and Steamboat 5th field watersheds are considered NHP and do not require RTV site management, for example). The direction also listed criteria for NHP designation in other watersheds with moderate and low quantities of reserved habitat. Row River watershed fell in the category for moderate reserves, and was assessed for NHP sites based on that programmatic direction. As a result, 3 of the RTV sites (sites 3, 12, and 26) contained in the Row River watershed are designated as Non-High Priority (Under criterion 3 of the 2003 "pilot area process") and therefore not included in this proposal. One site (site 11) falls in a reserve and outside of proposed

activities and does not require NHP designation because no project-related impacts are expected for the site (Table 1).

In total, 18 out of the 22 sites within the project area that require site management present a conflict between project purpose and need and management recommendations (Table 1), and are proposed for NHP designation after consideration of the following analysis.

Table 1. Project Area RTV Site Status

Site	Status	Number of nests	Proposed for NHP Designation	Site	Status	Number of nests	Proposed for NHP Designation
1	Active	5	Yes	15	Active	2	Yes
2	Active	2	Yes	16	Inactive	1	No
3	Active	1	No, already NHP[1]	17	Active	6	Yes
4	Active	3	Yes	18	Active	6	Yes
5	Active	1	Yes	19	Active	16	Yes
6	Active	1	Yes	20	Inactive	2	No
7	Active	1	Yes	21	Active	2	Yes
8	Active	2	Yes	22	Active	3	Yes
9	Inactive	1	No	23	Inactive	1	No
10	Active	1	Yes	24	Inactive	1	No
11	Active	8	No	25	Active	2	Yes
12	Unconfirmed species	1	No, already NHP[1]	26	Active	1	No, already NHP[1]
13	Active	2	Yes	27	Unconfirmed Species	1	Yes
14	Inactive	1	No	28	Unconfirmed Species	1	Yes

[1]Sites are designated NHP under programmatic direction contained in FS/BLM direction memorandum 2630(FS)/1736PFP(BLM)(OR-935)P.

Criteria Indicating Little or No Concern for Persistence **(USDA/USDI 2001):**

The following four criteria from the 2001 Survey and Manage ROD are used as a basis for analysis for NHP site designation according to direction in FS/BLM memorandum 1900/2600 (FS)/1736 (BLM) (OR931). Table 2 contains a summary of information revealed by the analysis conducted.

1. Moderate-to-high number of likely extant sites/records.

2. High proportion of sites and habitat in reserve land allocations or limited number of sites within reserves, but the proportion or amount of potential habitat within reserves is high and there is a high probability that the habitat is occupied.

3. Sites are relatively well distributed within the species range.

4. Matrix S&G or other elements of the NWFP provide a reasonable assurance of species persistence.

Table 2. Summary of Watershed and Project Baselines

Row River Watershed Attributes	Quantity	Proportionality
Total watershed acres	179,136	
Federal ownership acres within watershed	106,947	60% of the watershed
Federal lands suitable RTV habitat acres	47,862	45%of federal lands in watershed
Federal lands reserved acres	62,611	59% of the federal lands in watershed
Federal suitable RTV habitat reserved acres	30,525	64% of federal red tree vole habitat
Total number of known sites on the Forest	443 sites (1,384 nests)	
Total number of known sites in watershed	96 sites (228 nests; 84 sites likely extant)	
Quartz Project acres	1025 acres	
Quartz Project acres >80 years old	614 acres	
Calapooya Project acres	707 acres	
Calapooya Project acres > 80 years old	664 acres	
Number of project area sites active RTV	19 sites	
Number of project area non-conflicting active sites[1]	1 site	
Number of project area sites inactive RTV[1]	6 sites	
Number of project area sites unconfirmed species	3 sites	
Number of project area sites already designated NHP[1]	3 sites	
Total number of sites requested for designation as NHP	18 sites	

[1]NHP Designation not needed

1. **<u>Moderate-to-high number of likely extant sites/records:</u>**

Within the federal ownership of the Row River 5th field watershed there are 228 nests which comprise 96 sites identified as a result of agency and citizen survey efforts, and are contained in the BLM GeoBOB and USFS NRIS databases depending on land ownership (Figure 5). However, harvest activity records indicate that up to 12 of these sites may have received harvest activity (i.e. inactive sites which did not require management according to management recommendations). The remaining 84 sites are still likely extant because official management recommendations have been used in all projects to date. This means that, at a minimum, all active sites and inactive sites in close proximity to active sites were removed from timber harvest, received buffers, and/or have not been disturbed or modified since

their discovery. The habitat conditions at these known sites range from high–quality LSOG to early-to-mid-seral plantations which were surveyed before thinning projects in stands younger than 80 years of age were exempted from the Survey and Manage standards and guidelines ("Pechman Exemptions" in 2006).

To date, relatively little of the federal lands in the Row River Watershed have been surveyed for RTV; Approximately 8,364 acres have been surveyed according to NRIS and GeoBOB records which accounts for only 8% of the total federal ownership (106,947 acres approx.). Approximately 4,892 acres of this survey effort (58% of the total effort) took place in areas which were previously regeneration-harvested. Despite this relative low proportionality of surveys in higher quality habitat (3,472 acres; 42%) at the watershed scale, nearly 100 RTV sites (228 nests) have been identified to date, and it is a reasonable assumption that higher quality habitat would contain a higher concentration of RTV sites. This indicates that there is a high likelihood that there are other extant RTV sites in the remaining unsurveyed higher quality habitat in the watershed.

The Row River Watershed contains a comparatively high amount of suitable RTV habitat; in a range-wide analysis of RTV suitability in 5th field watersheds, the Row River watershed was determined to have the 8th highest amount of suitable RTV habitat out of 214 watersheds, and ranked in the upper 1/3 of watershed suitability in terms of proportion of federal lands providing suitable habitat (Rob Huff, personal communication). The high amount of suitable habitat (approximately 47,862 acres of suitable habitat in the watershed; Table 4) which is likely occupied by RTV (see analysis below for a discussion on likelihood of occupancy) and the high likelihood of occurrence of other extant RTV sites indicates that there currently is a moderate to high number of likely extant sites within the watershed when considered in conjunction.

We conclude that this criterion is currently met on the landscape because known sites have been managed according to recommendations designed to provide a reasonable assurance of persistence and are therefore likely still extant, and because there are a moderate to high number of likely extant sites (known or not yet known) based on survey effort and habitat conditions within the watershed.

Project Impacts: Proposed project activities would occur on approximately 1,278 acres of forested land in matrix land allocation, which is currently considered suitable for RTV (The regeneration harvested stands are currently considered unsuitable). Many of these suitable thinning stands would remain in conditions which are considered suitable for RTVs under RTV survey protocol definition, or would reach suitability in short order. Additionally, the large trees which are providing structure for a majority of the RTV nests in thinning stands would not be targeted for harvest based on an upper diameter limit for harvest in the thinning prescription (which is itself thinning from below). These factors lead to the potential that RTVs could continue to survive in thinning stands post-harvest. However, interconnectivity of the canopy will be interrupted temporarily which removes an important component of RTV movement and foraging behavior (Swingle 2005, Swingle and Forsman 2009). Therefore, even though RTV may persist in the stands post-thinning and habitat may continue to meet definitions of suitable, for the sake of this analysis these stands will be considered temporarily unsuitable post-harvest and the RTV sites within the thinning stands will be considered to be no longer extant after project implementation. This will remove 22 of the 84 extant sites in the watershed (26% reduction), three of which are already considered NHP, leaving 62 known sites. In terms of suitable habitat, proposed

thinning units would remove 3% of the suitable habitat in the watershed leaving approximately 46,552 acres of suitable habitat after project implementation. None of the 30,525 acres of suitable habitat in reserves would be removed.

The combination of a moderate number of known sites remaining post-project and the high quantity of remaining habitat that is likely occupied lead to the conclusion that this criterion will continue to be met in the future regardless of NHP designation and that project implementation will not compromise species persistence objectives.

2. <u>High proportion of sites and habitat in reserve land allocations or limited number of sites within reserves, but the proportion or amount of potential habitat within reserves is high and there is a high probability that the habitat is occupied.</u>

For this analysis reserve land allocations came from multiple sources of direction or policy (see Table 3 for source policy and rationale leading to each allocation being considered reserve). Rationale provided in 2003 supplemental direction for designation of NHP sites within the pilot area guided the delineation of what was considered a reserve land allocation in this process (see Appendix B of FS/BLM memorandum 2630(FS)/1736PFP(BLM)(OR-935)P). The reserve allocations in the watershed were reviewed for consistency with the ability to provide RTV habitat into the future.

Table 3. Categories of Reserve Allocations for Analysis

Type of Reserve	Source	Rationale
Administratively Withdrawn Areas (AWA)	Northwest Forest Plan (USDA/USDI 1994)	Focus for AWA is for late-successional habitat. Such areas are removed from allowable sale quantity and are likely to continue to provide and/or develop suitable RTV habitat.
Inventoried Roadless Areas (IRA)	Roadless Area Conservation; Final Rule (36 CFR 294.13)	Timber may not be cut, sold, or removed in IRAs except in rare circumstances specified in the Final Rule. This management is likely to support LSOG characteristics and RTV habitat by extension.
Late Successional Reserve (LSR)	Northwest Forest Plan (USDA/USDI 1994)	Harvest is not allowed in stands over 80 years of age except in circumstances specified in NWFP Standards and Guidelines (1994; C-12, C-13) and is subject to REO review. Silvicultural treatments in stands under 80 years of age are designed to create/maintain LSOG conditions.
100 acre owl core use areas (LSR 4)	Northwest Forest Plan (USDA/USDI 1994)	The Standards and Guidelines for LSR apply.
Riparian Reserves (RR)	Northwest Forest Plan (USDA/USDI 1994)	Focus for RR is for various hydrological and ecological processes including providing habitat and connectivity for terrestrial species such as RTV. The NWFP prohibits management in riparian reserves which retard or prevent attainment of Aquatic Conservation Strategy Objectives.
Unsuitable Soils (US)	Umpqua NF LRMP (USDA 1990)	The Umpqua LRMP lists certain soil types which are unmanageable because management would likely lead to irreversible damage. These soils do not limit the development of RTV habitat; they simply have a high slide potential. According to the LRMP no tree-cutting or ground disturbing activities will occur in these areas.

The areas described as reserves overlap with each other as well as with other land allocations within the Forest LRMP and the NWFP. For this analysis reserve allocations were prioritized according to stringency of management restrictions and were measured so that no area was double-counted. In an effort to use the best available science in this analysis, a RTV habitat suitability model published by Dunk and Hawley (2009) was applied to the Regional 2012 GNN spatial data set in ArcGIS 10.1 by USFS and BLM specialists. The output of this effort offered a geospatial representation of habitat suitability. The model was then run through spatial analyst tools to reduce "raster noise", and was overlaid on the land allocations to determine suitable habitat within each allocation type appropriate for use at the coarse scale of the 5th field watershed to determine proportionality (Figure 6). Habitat was considered suitable based upon the probability of occupancy being above 25%, which was the value used by Dunk and Hawley (2009) to successfully identify presence and absence of voles in the evaluation of their model. The geospatial model was evaluated by comparing the output to satellite imagery and knowledge of conditions on the ground, after which biologists on the District concluded that the model satisfactorily matched habitat conditions and was a reasonable tool to assess habitat suitability at the scale needed for this analysis. Table 4 below quantifies the non-overlapping acreage within each land allocation, how much suitable habitat falls in each allocation, and how the suitable habitat is distributed across allocations proportionally.

Table 4. Row River watershed: Breakdown of RTV Habitat Suitability by Allocation and Proportionality (Non-overlapping Acreage).

Allocation[1]	Suitable Ac	Total Ac	% Suitable	% of Total Suitable	
Non Reserved	17,336	44,336	39%	36%	**Suit. Acres Reserved**
AWA	341	1,017	34%	1%	30,525
IRA	6,679	10,203	65%	14%	**% Fed Land Reserved**
LSR	6,600	14,736	45%	14%	59%
LSR4	3,428	4,532	76%	7%	**% Fed Land Suitable**
RR	12,054	28,468	42%	25%	45%
US	1,424	3,655	39%	3%	**% Reserves Suitable**
					49%
Total	**47,862**	**106,947**			**% of Suit Hab Reserved**
					64%

[1]AWA = Administratively Withdrawn Areas
IRA = Inventoried Roadless Areas
LSR = Late Successional Reserve
LSR4 = 100 Acre Owl Core Use Areas
RR = Riparian Reserves
US = Unsuitable Soils

27 of the sites in the watershed are contained either partially or completely within the reserve system described above. These 27 sites comprise 31% of the 84 extant sites in the watershed, which

reasonably constitutes a limited number of sites in reserves. Having a limited number of known sites in reserves is to be expected because most RTV data are collected through pre-disturbance surveys, and planned disturbance is less frequent within reserves.

Much of the federal land in the Row River watershed is suitable for RTV (45% of the total federal land). Suitable habitat makes up a higher proportion of reserve lands than federal lands in general (49% vs 45%), and much higher than non-reserve lands (49% vs 39%), which suggests that reserves are indeed managing to capture and develop more high-quality habitat than non-reserves. In total, a high quantity of suitable habitat (approximately 30,525 acres) is in reserve allocations, which constitutes 64% of the total suitable habitat on federal lands (approximately 47,862 acres total).

The model used for this analysis was developed using presence/absence data, and was designed to show where RTVs are likely to exist. In the evaluation of the model, Dunk and Hawley (2009) found that their model offered a very good to excellent ability to predict RTV presence/absence. Therefore, logically, habitat which is designated as "suitable" by the model is highly likely to contain RTV. Additionally, location of known RTV presence indicates modelled suitable habitat is likely occupied based on occurrence data relative to habitat quality; around 59% (134 out of 228) of the RTV detections in the watershed exist in natural stands (not previously regeneration harvested). These natural stands account for 42% of the total survey effort to date (3,472 out of 8,364 total survey acres), which translates to a higher detection rate in natural, older stands than in regeneration harvested stands. This difference in detection rate indicates that older habitat likely supports higher RTV density than younger stands. Dunk and Hawley found that across their entire study area RTVs selected for older, more mature habitat, that reserves contained higher quality habitat than non-reserves, and that reserves contained a higher quantity of high-quality habitat than non-reserves. The conditions within the Row River watershed are consistent with these findings. This fully supports the conclusion that habitat which is indicated as suitable by the model is likely occupied by RTV, 64% of which is reserved.

We conclude that this criterion is currently met on the landscape because even though a limited number of sites exist within reserves, a high amount (over 30,000 acres) and a high proportion (nearly 2/3) of suitable habitat occur within reserves and there is a high likelihood that the reserved habitat is occupied.

Project Impacts: None of the known sites within reserves are proposed for NHP designation, and none of the suitable habitat that exists in reserves will be removed by proposed thinning activities. Therefore, the ability of the Row River 5th field watershed to meet this criterion is unaffected by NHP designation and project implementation will not compromise species persistence objectives.

3. **<u>Sites are relatively well distributed within the species range.</u>**

In order to assess whether known sites are well distributed across the species range within the watershed, sub-watersheds were assessed for vole presence. A well-distributed pattern allows for distribution sufficient to permit normal biological function and species interactions, considering life history characteristics of the species and the habitats for which it is specifically adapted. In order to address this criterion, the number and array of known sites (including additional likely extant sites), the amount and array of suitable RTV habitat, and the connectivity between those sites and

habitat across the Row River watershed and in adjacent watersheds was assessed. Figures 3 - 7 display this information.

The 84 extant sites are spread throughout the watershed, with known sites present in each of the 5 sub-watersheds (Figure 5). Additionally, RTV sites are well distributed in elevation, ranging from 768 ft. in the lower watershed to 4,334 ft. in the upper limits of the watershed.

Suitable habitat is concentrated mostly in the upper portions of the watershed which is almost entirely federally owned. In the lower portion of the watershed suitable habitat is mostly restricted to BLM lands. Outside of BLM lands, private lands provide infrequent patches of suitable habitat which may function to allow RTV to disperse between BLM and USFS owned tracts of land, but it is unlikely that private lands provide stable habitat for RTV populations. However, according to model data, federal lands provide over 47,800 acres of suitable habitat (Table 4) which is present in all regions of the watershed and is considered relatively well connected upon assessment by District biologists; suitable habitat is well dispersed throughout federal lands and is largely connected by large corridors of suitable habitat or by younger stands in various levels of development through which RTVs can use to move between suitable blocks (Figure 6; see Swingle 2005 and Swingle and Forsman 2009 for discussion on RTVs in younger stands). This large quantity of interconnected habitat along with the wide spatial distribution of a moderate to high number of likely extant sites/records indicate that the species is sufficiently distributed to permit normal biological function and species interactions, which is the definition of "well distributed" according to the 2001 ROD (USDA/USDI 2001).

We conclude that this criterion is currently met because the sites and habitat meet the definition of "well distributed" at the relative scale of the Row River 5th field watershed.

Project Impacts: As discussed above, project implementation has the potential consequence of removing 21 known sites from the Row River Watershed. However, suitable habitat (which has a high likelihood of occupancy) will remain dispersed throughout the watershed. Additionally, the proposed activities do not isolate any portion of the watershed from the rest or remove continuity of suitable habitat from any given area. Therefore, available habitat and known sites continue to provide a well distributed population within the species range at the 5th field watershed scale, and this criterion will continue to be met in the future regardless of NHP designation and project implementation will not compromise species persistence objectives.

4. <u>Matrix S&G or other elements of the NWFP provide a reasonable assurance of species persistence.</u>

Survey and Manage mitigations were put in place for the RTV for two main reasons: a lack of understanding of the life history and ecology of the species, and concern over the ability for the species to disperse based on what was known about the species at the time of designation. Assessment of the species concluded that LSR designated under the NWFP would provide for well distributed and abundant populations for the species, and that RR would provide connectivity between LSRs (FEMAT 1993, USDA/USDI 1994b). In the 20 years which has passed since the RTV was placed under Survey and Manage mitigations, more understanding has been attained concerning the distribution, life history, ecology, and habitat requirements of the RTV. Although species persistence is a concern throughout the

known range of the species as a whole, proposed management activities in the Row River watershed are not expected to decrease such persistence on a localized scale nor throughout the known range. The components of land management activities which will likely contribute to species persistence include the following:

- **Distribution of the matrix**. The matrix NWFP land allocation makes up approximately 84,050 acres of the federal lands in the Row River watershed. However, approximately 33,229 acres of this matrix lands falls within riparian reserves. This matrix land is also overlaid and interspersed with other types of reserves such that suitable habitat within and without of the matrix is well distributed and well connected (Figure 7).
- **Connectivity via riparian reserves**. The riparian reserve NWFP land allocation was put in place in part to offer connectivity between LSRs and other reserves. Within the watershed the LSRs and other reserves are indeed well connected by RRs and provide significant amounts of quality habitat throughout which RTVs can occupy and disperse (Figure 6; Figure 7).
- **Habitat provided by LSR4s.** Interspersed throughout the matrix are approximately 5,495 acres of the highest quality habitat (76% suitability) provided by the established 100 acre LSR4s. (Table 4; Figure 6) These reserves are well dispersed and well connected by RRs.
- **Matrix standards and guidelines.** The NWFP emphasizes green-tree and snag retention in matrix management. This is guidance for the retention of patches of old forest for LSOG related species so that these species can persist through time in matrix land.
- **Recovery plan for the northern spotted owl.** Through the implementation of the recovery plan, federal agencies have preserved the integrity of known and historic owl sites and preserved high-quality owl habitat in distribution and arrangements beyond that provided by the reserve system. By maintaining these spotted owl sites as prescribed by recovery actions 10 and 32, RTV habitat has also been and will likely continue to be provided for by extension. These owl sites and areas of high quality habitat are spread throughout the watershed, and are well connected by the reserve system.
- **Connectivity via Ranger District habitat connectivity zone.** In the watershed analyses for the Layng Creek (USDA 1995), Brice Creek (USDA 1997), and Sharps Creek (USDA/USDI 1999) sub-watersheds, a 4,000 foot wide corridor was established as a recommendation for District planning in the future. The connectivity zone places a priority on continuity between habitats in these adjacent sub-watersheds when planning activities, and prioritizes management for connectivity of late-successional conditions within the zone's boundaries. The connectivity zone offers interconnectivity of reserves within the watershed and also connects reserves within the watershed to the large blocks of LSR which surround the Ranger District. Because the connectivity zone connects reserves within the watershed and offers connectivity for movement to and from adjacent watersheds, this connectivity zone is likely to help provide well connected reserved habitat and provide for genetic dispersal to ensure persistence of the RTV in the watershed into the future. One site proposed for NHP designation falls within this connectivity zone, but it should be noted that the proposed activities do not compromise connectivity of late successional habitat; proposed activities do not span the connectivity zone, they instead exist on the periphery, and in places where habitat has not been disturbed for some time. This is

consistent with the connectivity zone recommendations in the watershed analyses. The District connectivity zone, and the reserves it provides connectivity to, is displayed at the watershed scale in Figure 7 and at the project scale in Figure 8.

- **Eugene BLM RMP land use allocations.** The lands administered by Eugene BLM in the Row River watershed which are not LSR are mostly (81%) designated as connectivity/diversity blocks (USDI 1995; Figure 7). This land use allocation is managed according to standards and guidelines designed to retain late successional habitat and manage at longer rotations, and is therefore likely to contribute toward species persistence in those areas.

Working in concert, the above components of the NWFP and associated elements of public land management contribute to maintenance and protection of RTV habitat and dispersal of the species such that there is a reasonable assurance that the species will persist in the watershed.

Project Impacts: Proposed thinning activities and NHP designations will not affect land management policy, standards and guidelines, or watershed analysis recommendations. Therefore, we conclude that this criterion is met.

Conclusion

After careful analysis of RTV site data, habitat conditions, and land management practices we conclude that all four of the criteria indicating little or no concern for persistence are met within the Row River watershed regardless of proposed NHP designation or project implementation. With all of these preceding facts considered, there is a very high likelihood that the RTV will continue to persist within the watershed, and that NHP designation for the 18 sites described in Table 1 is warranted and appropriate for these two project areas.

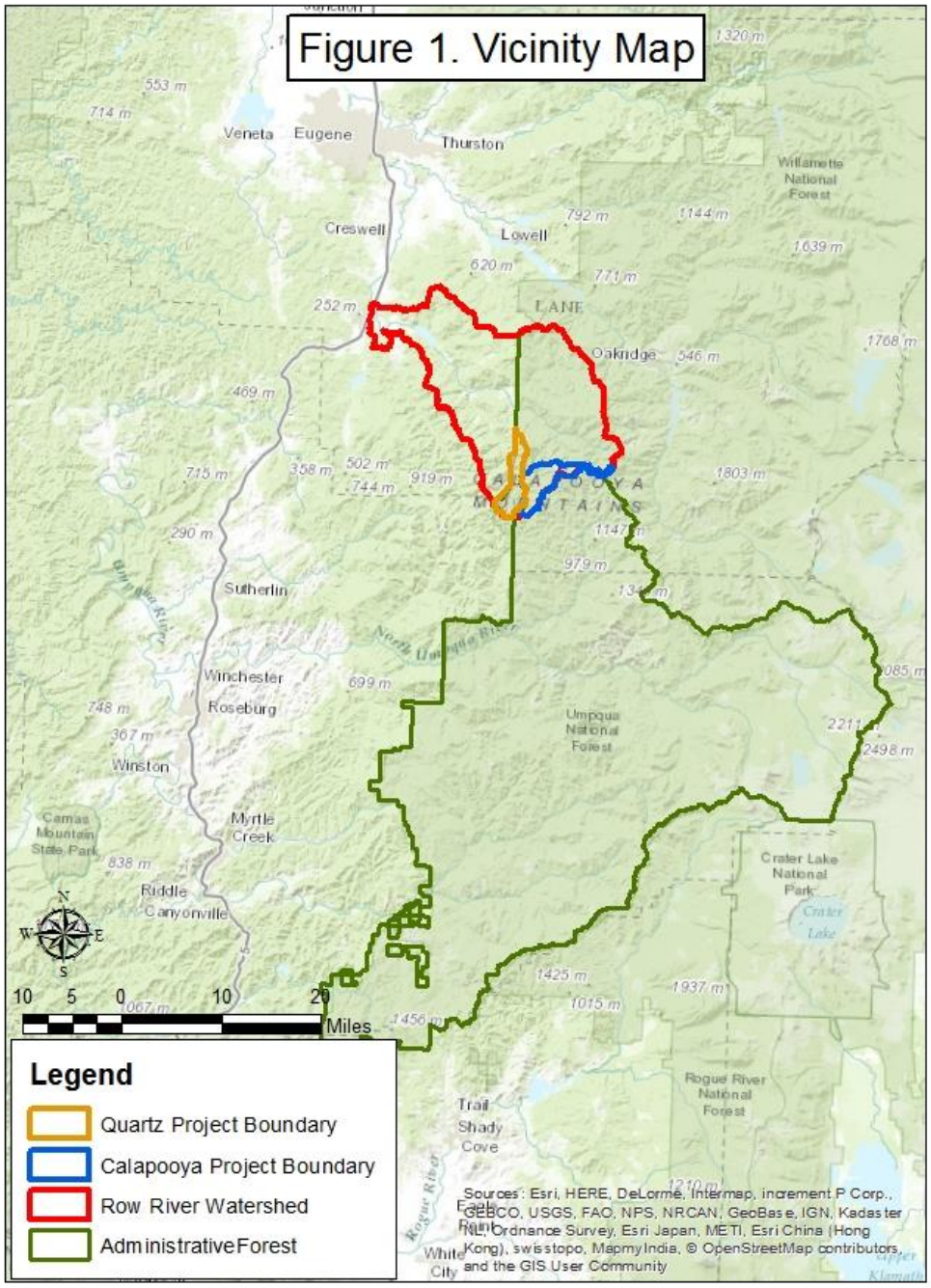
Figure 1. Vicinity Map
Veneta
Eugene
Thurston
Creswell
Lowell
LANE
Oakridge
Sutherlin
Winchester
Roseburg
Winston
Myrtle Creek
Riddle
Canyonville
Camas Mountain State Park
Umpqua National Forest
Willamette National Forest
Crater Lake National Park
Rogue River National Forest
Trail
Shady Cove
Eagle Point
White City
10 5 0 10 20
Miles
Legend
Quartz Project Boundary
Calapooya Project Boundary
Row River Watershed
Administrative Forest
Sources: Esri, HERE, DeLorme, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

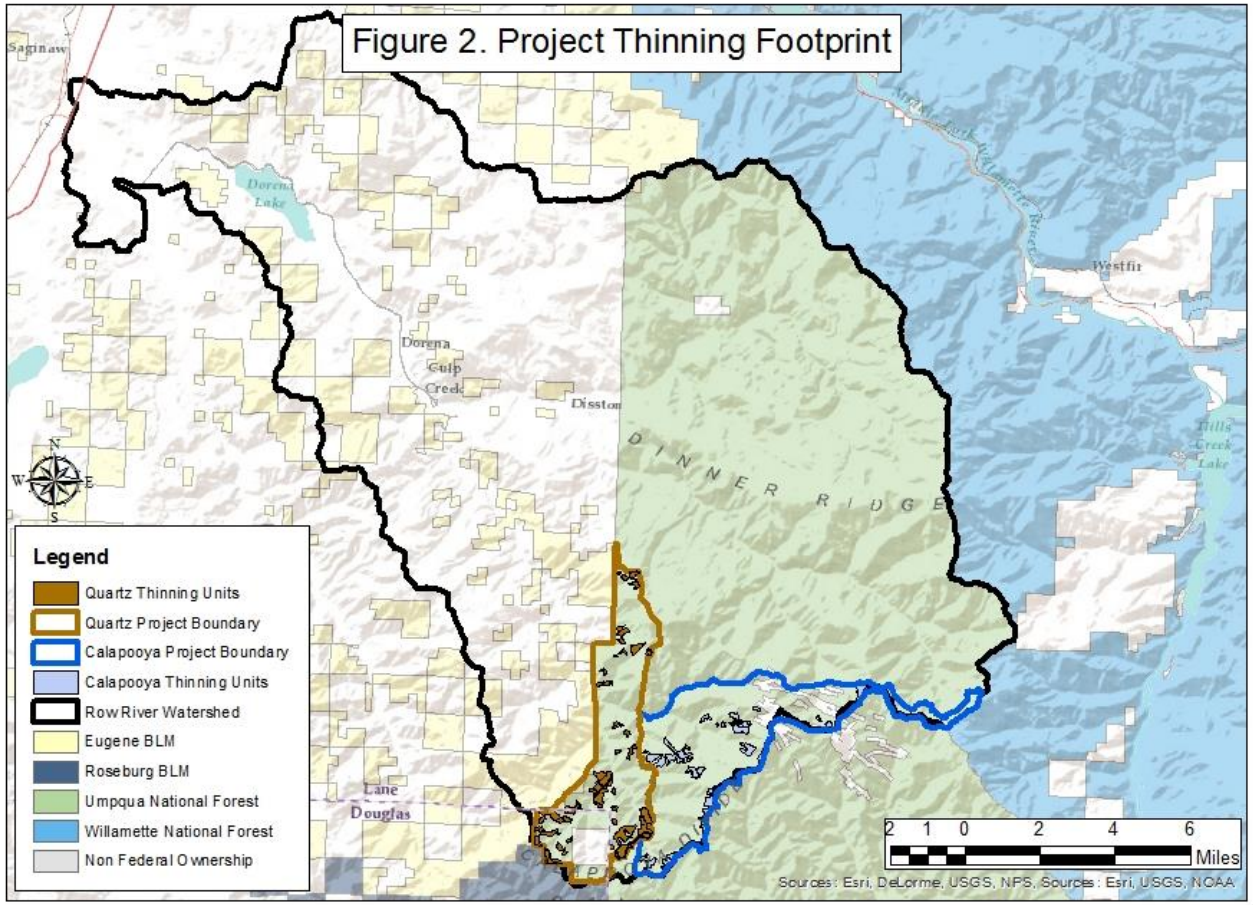
Figure 2. Project Thinning Footprint
Saginaw
Dorena Lake
Dorena
Gulp Creek
Disston
Westfir
Trills Creek Lake
DINNER RIDGE
Lane
Douglas
N
W
E
S
Legend
Quartz Thinning Units
Quartz Project Boundary
Calapooya Project Boundary
Calapooya Thinning Units
Row River Watershed
Eugene BLM
Roseburg BLM
Umpqua National Forest
Willamette National Forest
Non Federal Ownership
2 1 0 2 4 6
Miles
Sources: Esri, DeLorme, USGS, NPS, Sources: Esri, USGS, NOAA

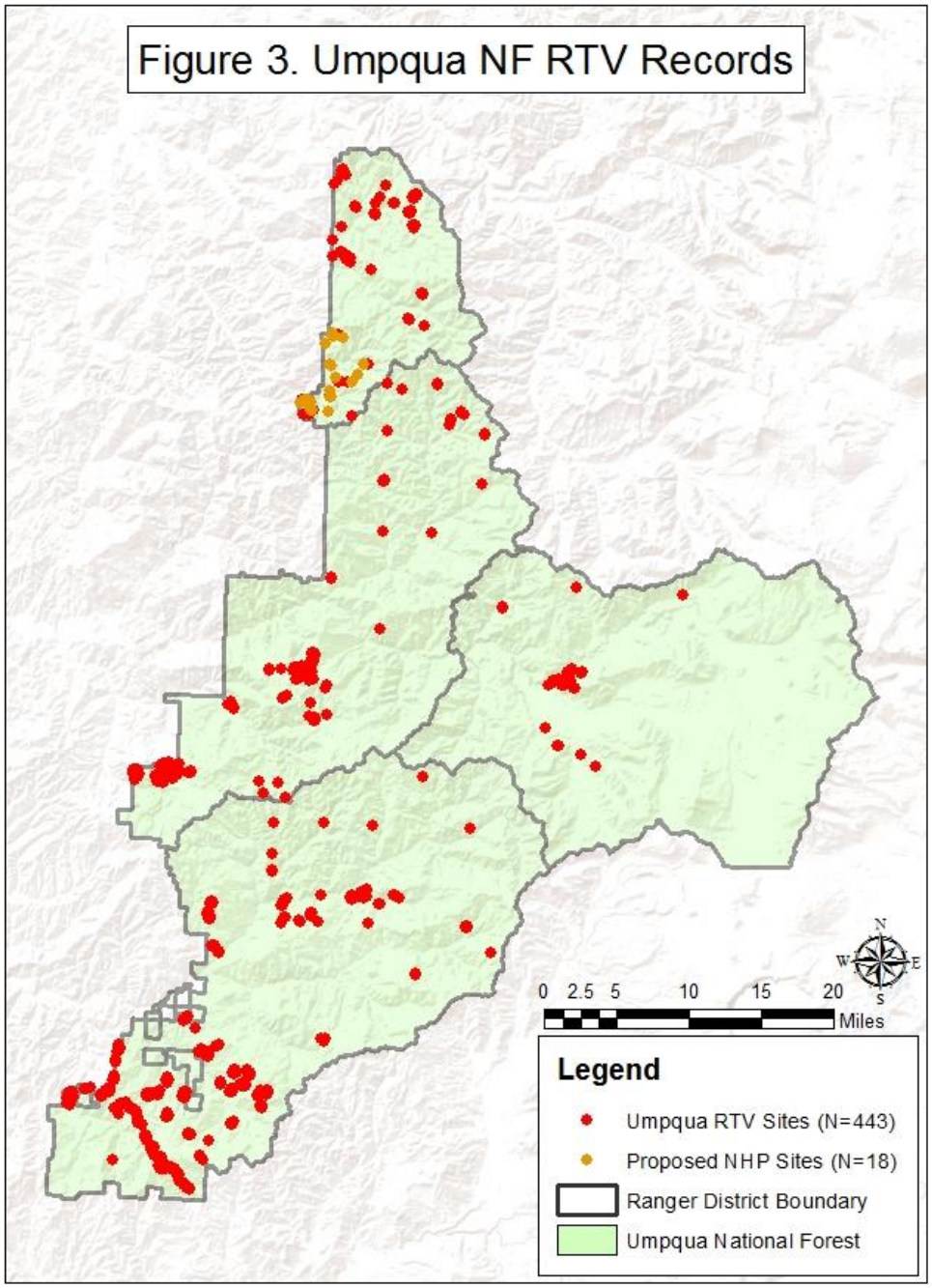
Figure 3. Umpqua NF RTV Records
N
W
E
S
0 2.5 5 10 15 20
Miles
Legend
Umpqua RTV Sites (N=443)
Proposed NHP Sites (N=18)
Ranger District Boundary
Umpqua National Forest

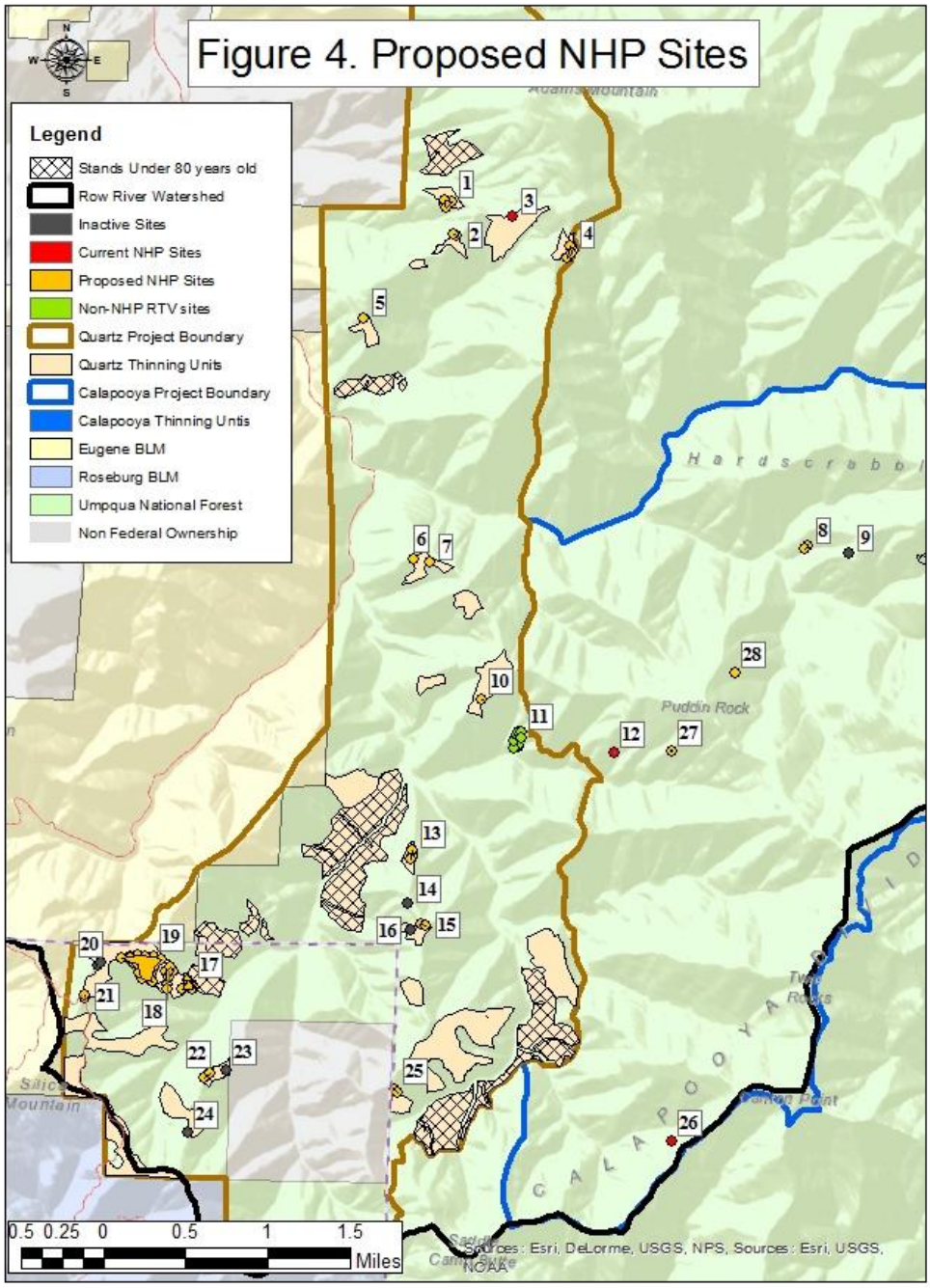
Figure 4. Proposed NHP Sites
Legend
Stands Under 80 years old
Row River Watershed
Inactive Sites
Current NHP Sites
Proposed NHP Sites
Non-NHP RTV sites
Quartz Project Boundary
Quartz Thinning Units
Calapooya Project Boundary
Calapooya Thinning Untis
Eugene BLM
Roseburg BLM
Umpqua National Forest
Non Federal Ownership
Puddin Rock
0.5 0.25 0 0.5 1 1.5
Miles
Sources: Esri, DeLorme, USGS, NPS, Sources: Esri, USGS, NOAA

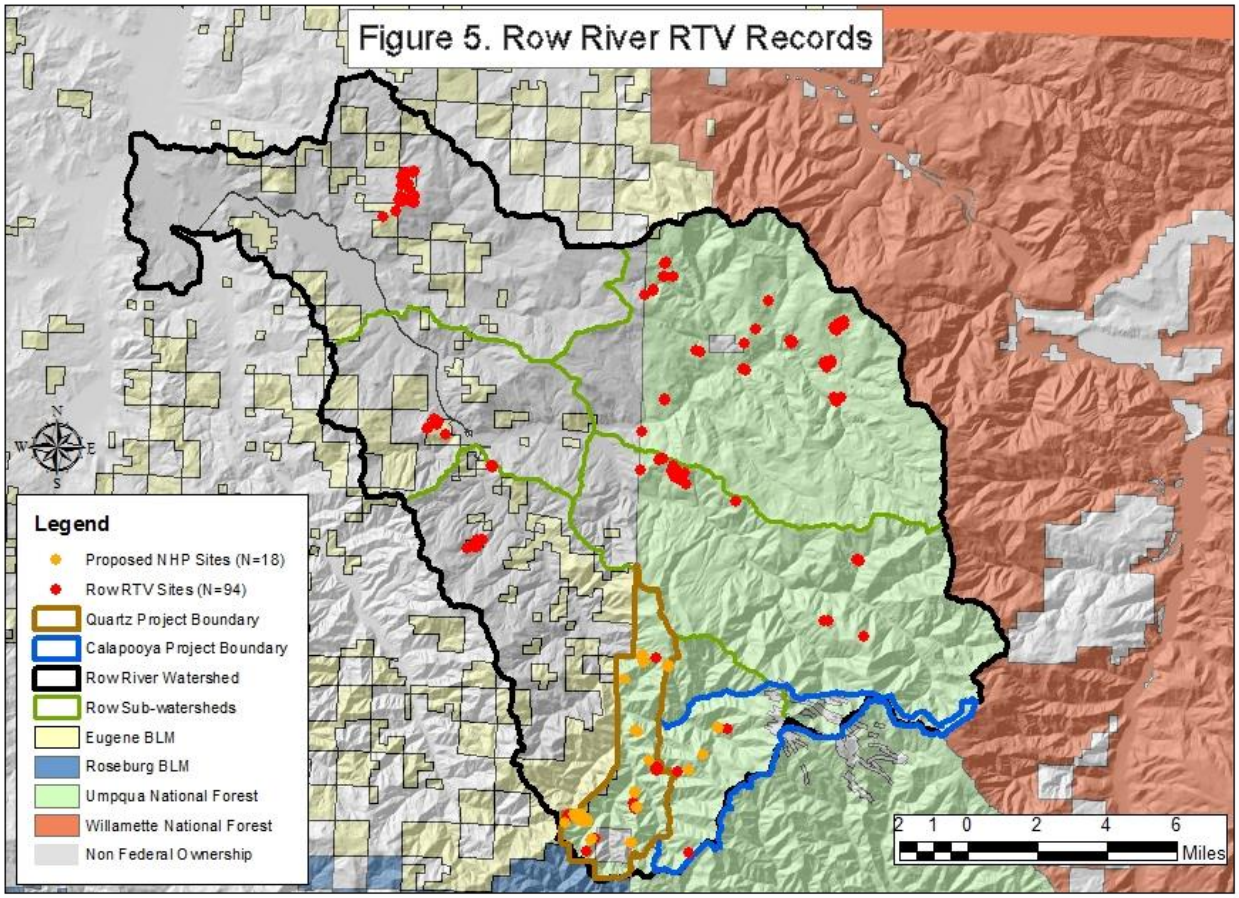
Figure 5. Row River RTV Records
Legend
Proposed NHP Sites (N=18)
Row RTV Sites (N=94)
Quartz Project Boundary
Calapooya Project Boundary
Row River Watershed
Row Sub-watersheds
Eugene BLM
Roseburg BLM
Umpqua National Forest
Willamette National Forest
Non Federal Ownership
N
W
E
S
2 1 0 2 4 6
Miles

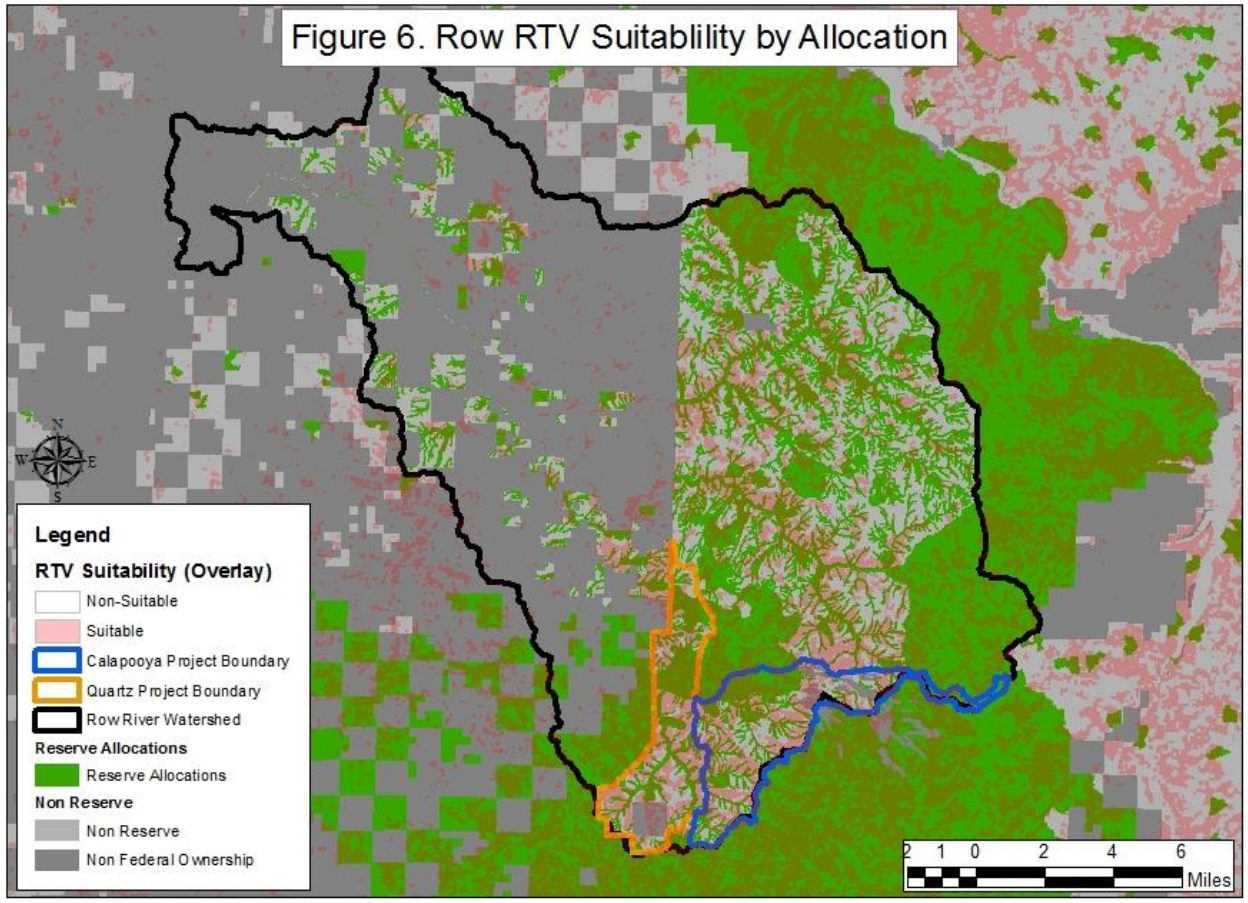
Figure 6. Row RTV Suitablility by Allocation
Legend
RTV Suitability (Overlay)
Non-Suitable
Suitable
Calapooya Project Boundary
Quartz Project Boundary
Row River Watershed
Reserve Allocations
Reserve Allocations
Non Reserve
Non Reserve
Non Federal Ownership
N
W
E
S
2 1 0 2 4 6
Miles

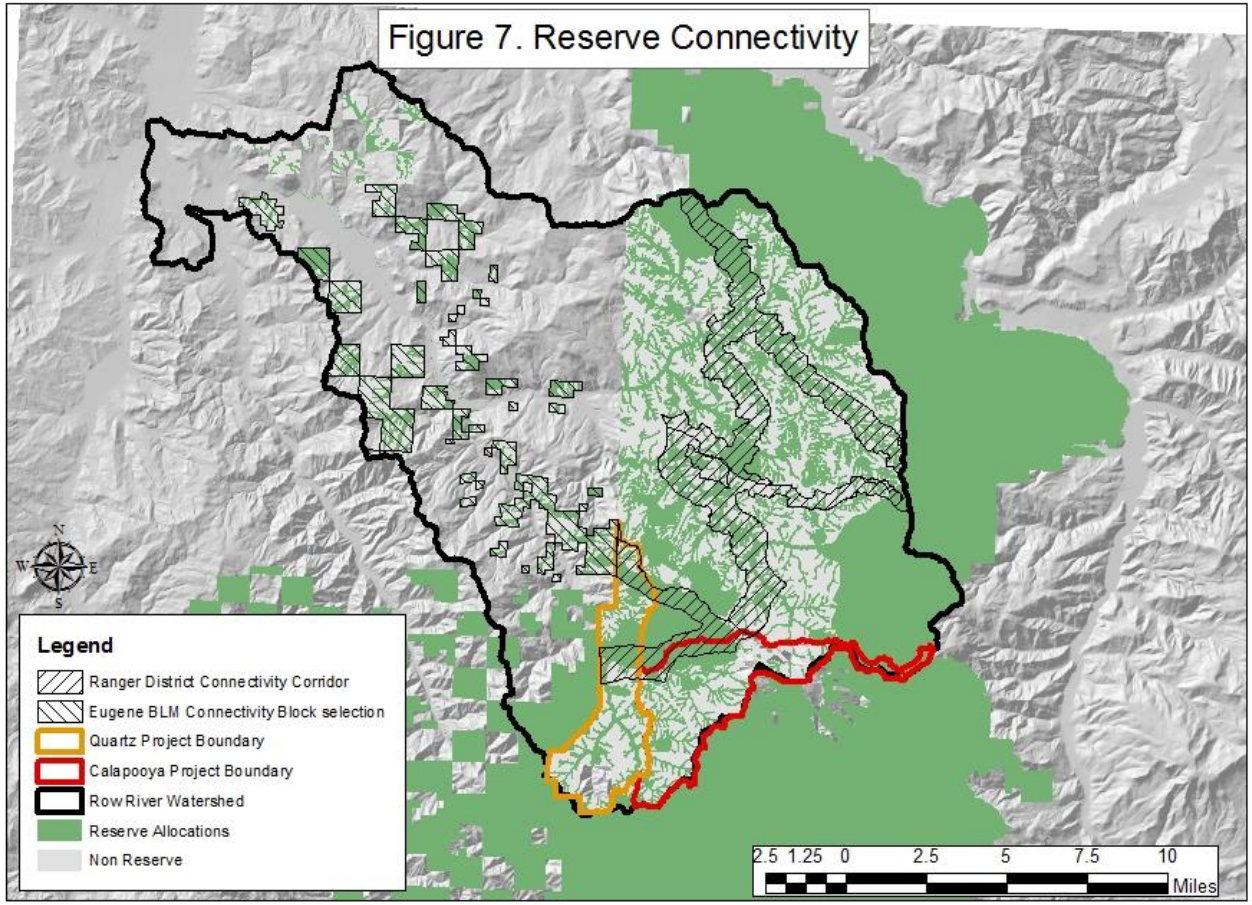
Figure 7. Reserve Connectivity
Legend
Ranger District Connectivity Corridor
Eugene BLM Connectivity Block selection
Quartz Project Boundary
Calapooya Project Boundary
Row River Watershed
Reserve Allocations
Non Reserve
N
W
E
S
2.5 1.25 0 2.5 5 7.5 10
Miles

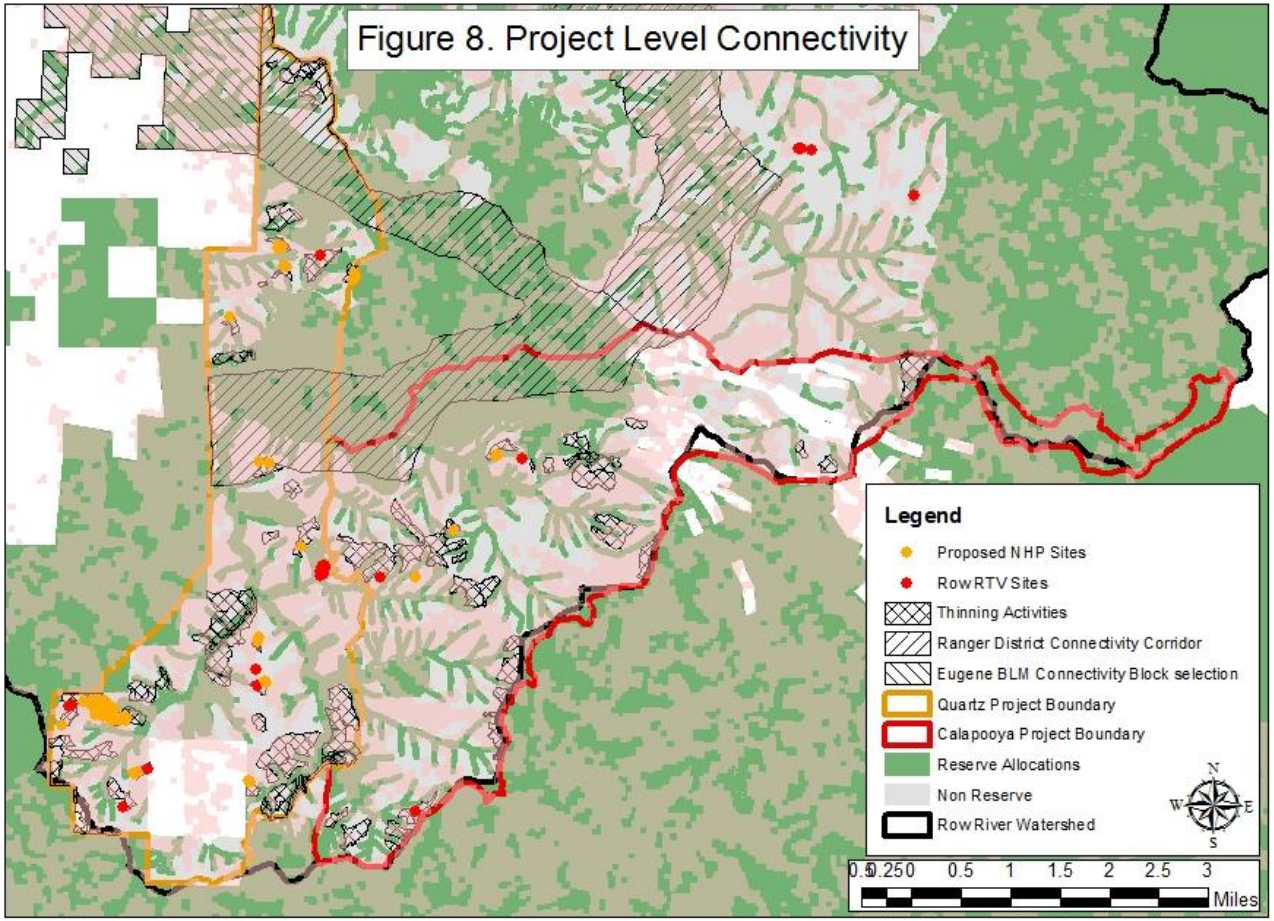
Figure 8. Project Level Connectivity
Legend
Proposed NHP Sites
Row RTV Sites
Thinning Activities
Ranger District Connectivity Corridor
Eugene BLM Connectivity Block selection
Quartz Project Boundary
Calapooya Project Boundary
Reserve Allocations
Non Reserve
Row River Watershed
N
W
E
S
0.5 0.250 0.5 1 1.5 2 2.5 3
Miles

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Proposal for Non-High Priority Site Designations for the Red Tree Vole in the Row River Watershed: Amendment 1

Umpqua National Forest, Cottage Grove Ranger District

August 24th 2015

This document is a supplement to the Proposal for Non-High Priority Site Designations for the Red Tree Vole in the Row River Watershed transmitted June 18th 2015 (FS 1900;2600, FY 2015-39940). This supplement incorporates the original proposal by reference. Please refer to the original document for introductory information, governing policy, and watershed-level habitat analysis.

On June 18th 2015, the Cottage Grove Ranger District proposed NHP designation of 18 red tree vole sites within the Row River watershed. As of this date, concurrence has been reached between all parties concerned, and as a result all 18 sites are now considered non-high priority and are released from management under official management recommendations under the 2001 Survey and Manage ROD according to direction in FS/BLM memorandum 1900/2600 (FS)/1736 (BLM) (OR931).

Since the original proposal was circulated, new information was submitted by citizen tree climbers which established 7 new red tree vole sites. These sites are composed of 17 nest structures which have either been confirmed to species and/or activity status, or are of unknown species/status which are considered active for management purposes. Site information, including site activity status, can be found in Table 5. Six of these new sites conflict with proposed management activities and have been assessed for NHP designation with this amendment. Site 34 lies outside of the one site-specific tree distance of planned habitat disturbance prescribed in management recommendations, resulting in no conflict with site management and no need for NHP designation.

Table 5. Project Area RTV Site Status for New Sites

Site	Status	Number of Nests	Proposed for NHP Designation
29	Active	6	yes
30	Active	2	yes
31	Unknown; presumed active	3	yes
32	Active	1	yes
33	Active	2	yes
34	Active	1	no; no management conflict
35	Active	2	yes

Analysis

Table 2 below has been modified from the original proposal to show changes presented by the 7 new sites. Note that the 18 sites which were included in the original proposal are now considered NHP which changes the current baseline of current NHP sites.

Table 6. Summary of Watershed and Project Baselines

Row River Watershed Attributes	Quantity	Proportionality	New Information/changes
Total watershed acres	179,136		**No changes**
Federal ownership acres within watershed	106,947	60% of the watershed	**No changes**
Federal lands suitable RTV habitat acres	47,862	45%of federal lands in watershed	**No changes**
Federal lands reserved acres	62,611	59% of the federal lands in watershed	**No changes**
Federal suitable RTV habitat reserved acres	30,525	64% of federal red tree vole habitat	**No changes**
Total number of known sites on the Forest	443 sites (1,384 nests)		**450 sites (1,401 nests)**
Total number of known sites in watershed	96 sites (228 nests; 84 sites likely extant)		**103 sites (245 nests; 91 sites likely extent)**
Quartz Project acres	1025 acres		**No changes**
Quartz Project acres >80 years old	614 acres		**No changes**
Calapooya Project acres	707 acres		**No changes**
Calapooya Project acres > 80 years old	664 acres		**No changes**
Number of project area sites active RTV	19 sites		**26 sites**
Number of project area non-conflicting active sites[1]	1 site		**2 sites**
Number of project area sites inactive RTV[1]	6 sites		**No changes**
Number of project area sites unconfirmed species	3 sites		**No changes**
Number of project area sites already designated NHP[1]	3 sites		**21 sites[2]**
Total number of sites requested for designation as NHP	18 sites		**6 sites[3]**

[1]NHP Designation not needed.
[2]Includes 18 sites designated as NHP as a result of June 18th proposal.
[3]Includes only new sites as original 18 sites are now NHP.

Criteria Indicating Little or No Concern for Persistence **(USDA/USDI 2001):**

Four criteria from the 2001 Survey and Manage ROD are used as a basis for analysis for NHP site designation according to direction in FS/BLM memorandum 1900/2600 (FS)/1736 (BLM) (OR931). The original proposal established that the watershed currently meets these criteria for red tree voles. This analysis includes the new vole site information to assess whether the watershed continues to meet that determination and if NHP designations for these new sites are warranted.

1. Moderate-to-high number of likely extant sites/records.

The original proposal concluded that this criterion is currently met on the landscape because known sites have been managed according to recommendations designed to provide a reasonable assurance of persistence and are therefore likely still extant, and because there are a moderate to high number of likely extant sites (known or not yet known) based on survey effort and habitat conditions within the watershed.

The new sites increase the number of extant known sites in the watershed from 84 sites to 91 sites. One additional extant known site (site 34) will remain intact within the project area post-project. The amount of suitable habitat present in the watershed post-project, and the likelihood that habitat is occupied, remains unchanged. Therefore, according to the same rationale used in the original proposal, we conclude that this criterion is currently met, and will continue to be met regardless of NHP designation of the 6 additional sites.

2. High proportion of sites and habitat in reserve land allocations or limited number of sites within reserves, but the proportion or amount of potential habitat within reserves is high and there is a high probability that the habitat is occupied.

The original proposal concluded that this criterion is currently met on the landscape because even though a limited number of sites exist within reserves, a high amount (over 30,000 acres) and a high proportion (nearly 2/3) of suitable habitat occur within reserves and there is a high likelihood that the reserved habitat is occupied.

The discovery of new sites do not change the number of sites in reserves, the amount or proportion of suitable habitat in reserves, or the likelihood that habitat is occupied. Therefore, according to the same rationale used in the original proposal, we conclude that this criterion is currently met, and will continue to be met regardless of NHP designation of the 6 additional sites.

3. Sites are relatively well distributed within the species range.

The original proposal concluded that this criterion is currently met on the landscape because the sites and habitat meet the definition of "well distributed" at the relative scale of the Row River 5th field watershed.

The new sites would increase the number of sites being removed from the watershed from 21 to 27 sites, and increases the areas in which tree voles have been documented. However, the amount of habitat being removed, the amount of suitable habitat remaining post-project, and the continuity of that remaining suitable habitat is unchanged from the original proposal. Therefore, according to the

same rationale used in the original proposal, we conclude that this criterion is currently met, and will continue to be met regardless of NHP designation of the 6 additional sites.

4. Matrix S&G or other elements of the NWFP provide a reasonable assurance of species persistence.

The original proposal concluded that this criterion is currently met on the landscape because working in concert, the referenced components of the NWFP and associated elements of public land management contribute to maintenance and protection of RTV habitat and dispersal of the species such that there is a reasonable assurance that the species will persist in the watershed.

The planned project activities and the designation of 6 additional sites would not change that determination because neither would affect land management policy, standards and guidelines, or watershed analysis recommendations. Therefore, according to the same rationale used in the original proposal, we conclude that this criterion is currently met, and will continue to be met regardless of NHP designation of the 6 additional sites.

Conclusion

After careful consideration of the new tree vole nests, and their impacts to the findings in the original proposal, we conclude that all four of the criteria indicating little or no concern for persistence are met within the Row River watershed and will continue to be met regardless of proposed NHP designation or project implementation. With all of these preceding facts considered, there is a very high likelihood that the red tree vole will continue to persist within the watershed, and that NHP designation for the 6 additional sites described in Table 1 above is warranted and appropriate for these two project areas.

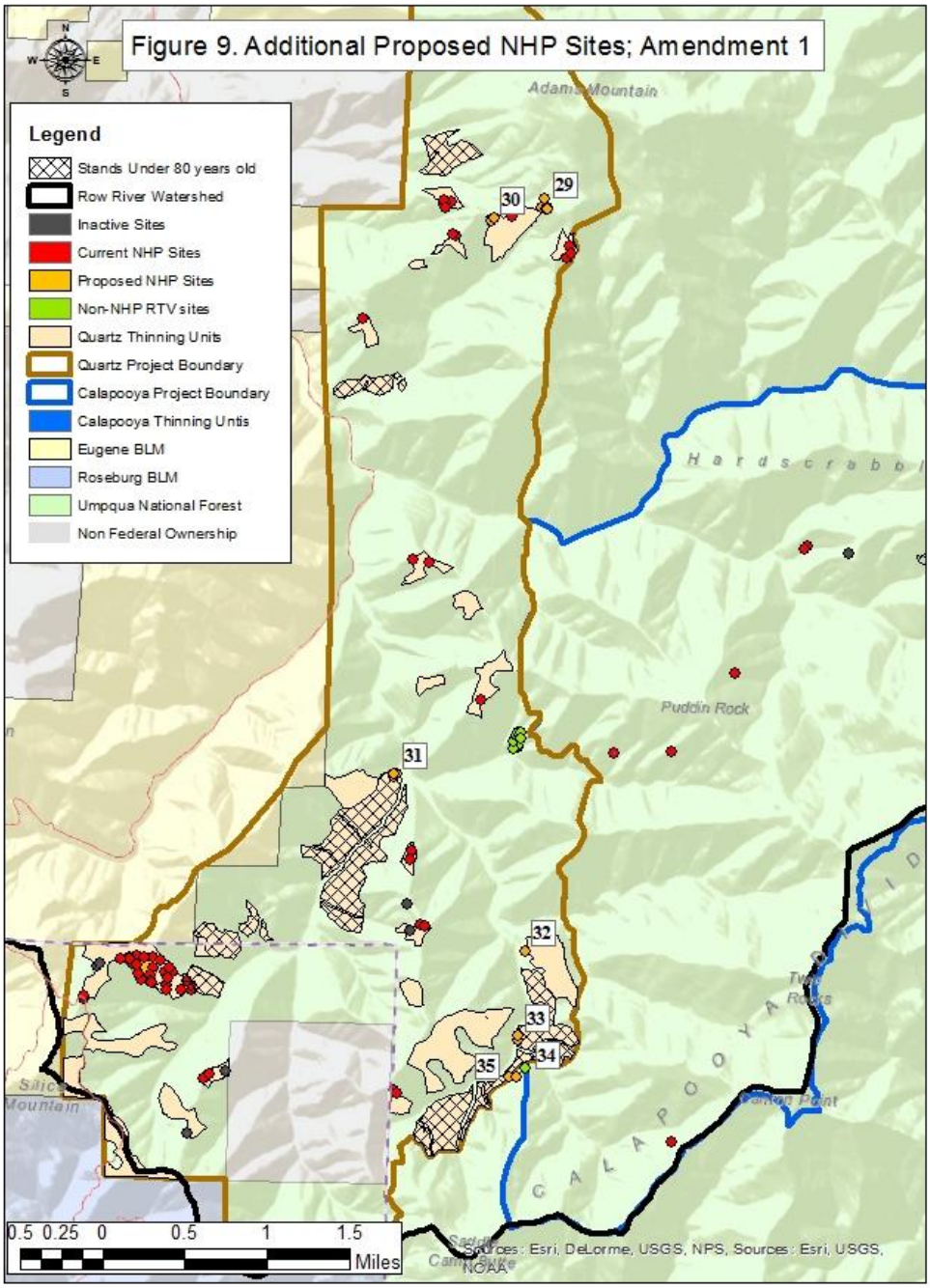
Figure 9. Additional Proposed NHP Sites; Amendment 1
Legend
Stands Under 80 years old
Row River Watershed
Inactive Sites
Current NHP Sites
Proposed NHP Sites
Non-NHP RTV sites
Quartz Thinning Units
Quartz Project Boundary
Calapooya Project Boundary
Calapooya Thinning Untis
Eugene BLM
Roseburg BLM
Umpqua National Forest
Non Federal Ownership
Adams Mountain
Puddin Rock
29
30
31
32
33
34
35
0.5 0.25 0 0.5 1 1.5
Miles
Sources: Esri, DeLorme, USGS, NPS, Sources: Esri, USGS, NOAA